Multi-Model Prediction with CCSM4 (3.5,3.0) and CFS

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• **CCSM3.0 (GFDL OI ODA):**
  – Ocean-Only ICs, All months (1981-present), 6-member ensembles

• **CCSM3.5 (GFDL OI ODA):**
  – Ocean-Only ICs, Jan, Apr, Jul, Oct, 6-member ensembles
  – O-L-A ICs, 21-30 Apr., 22-31 Oct, 10-member ensembles

• **CCSM4.0 (GFDL OI ODA):**
  – Ocean-Only ICs, Jan 1982-1999, 1-member ensemble

• **CCSM4.0 (CFSRR ODA):**
  – Ocean-Only ICs May 1982-85, 1-member ensemble
Results

• CCSM3.0 (Initialized Ocean)+CFS
• CCSM3.0 (O-L-A Initialized)
• CCSM3.5 (Initialized Ocean)
  – Sub-Seasonal (O-L-A)
• CCSM4.0 (Initialized Ocean)
  – GFDL-ODA
  – CFSRR-ODA
Nino3.4 Correlation Coefficient
Relative Operating Characteristics

ROC Curve Warm Events 6 Month Lead

Hit Rate (HR) vs False Alarm Rate (FAR)

- CFS
- CCSM
- Multi-Model

Warm Events

Relative Operating Characteristics

ROC Curve Cold Events 6 Month Lead

Hit Rate (HR) vs False Alarm Rate (FAR)

- CFS
- CCSM
- Multi-Model

Cold Events
Average Anomaly Correlation Skill of MJO Index (RMM12)
Apr and Oct Initial Conditions (1981-1999) with CCSM3.5

Individual Models (1-member); MME (2-members)

2-member Lagged Averaged Ensembles

RMM1

RMM2

Forecast Lead Time (Days)
Results

- CCSM3.0 (Initialized Ocean) + CFS
- CCSM3.0 (O-L-A Initialized)
- CCSM3.5 (Initialized Ocean)
  - Sub-Seasonal (O-L-A)
- CCSM4.0 (Initialized Ocean)
  - GFDL-ODA
  - CFSRR-ODA